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Dr. H. A. HAGEN.

ENTOMOLOGICAL NEWS

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Dr. H. A. HAGEN.

Dr. H. A. HAGEN, Professor of Entomology in Harvard University and one of the foremost entomologists of his time, died in Cambridge, Mass., Nov. 9, 1893.

HERMANN AUGUST HAGEN was born in Kœnigsberg, Prussia, May 30, 1817. His father, Karl Heinrich Hagen, was a Royal Councillor and Professor in the Albert University at Kœnigsberg. His mother's maiden name was Link. His early education was received at the Gymnasium of Kneiphoven, and in 1836 he entered the University of his native city as a student in medicine. In the "Vita" appended to his *Synonymia Libellularum Europæarum*, he has told us of the above-mentioned facts of his own life, and given us the names of his instructors in the University; the most noted of these was the zoologist, Martin Heinrich Rathke, whom he accompanied in 1839 on a visit to Norway, Sweden, Denmark and Germany, and whom he ever seems to have highly esteemed. It was in this same year, 1839, that he published his first entomological paper, his *Verzeichniss der Libellen Ostpreussens* (List of the dragonflies of East Prussia). He received his medical degree Oct. 17, 1840; and of the four theses

which he presented on that occasion, three were medical and one entomological (*Neuroptera et Orthoptera conjungi debent*), while the *Synonymia* above quoted was his "Dissertatio inauguralis." He afterwards studied in Berlin, Vienna and Paris, but returned to his home, describing himself in his *Bibliotheca* as "Arzt in Kœnigsberg."

His earliest and latest entomological publications concerned the Odonata, but throughout his entire life nearly every order of insects received a contribution from his studies. Early in the forties appeared the first of his numerous papers in the "Stettiner Entomologische Zeitschrift." Some of these were his earliest palæontological essay, *Die fossilen Libellen Europas* 1848, a review of the later literature on the Neuroptera 1848–52, *Die Sing-cicaden Europas* 1855, '56, '58.

A kindred spirit for the study of the Odonata, Dr. Hagen found in the eminent Belgian entomologist, Baron Edmond de Selys-Longchamps, four years his senior, and who still attends the meetings of the Belgian Entomological Society. Jointly, they produced what is still the standard work on European dragonflies, the "Revue des Odonates" (Brussels, 1850), "Monographie des Calopterygines" (1854), "Monographie des Gomphines" (1858), and if their joint names do not appear on later publications, yet each received and acknowledged the constant aid of the other, whether in Europe or separated by the Atlantic.

From 1850 until his departure for the United States, Dr. Hagen's entomological activity is well shown by the following list of his more important publications: "Leon Dufour ueber die Larven der Libellen mit Berücksichtigung der fruherer Arbeiten" (1853), "Monographie der Termiten" (1855, '58, '60), "Die Phryganiden Pictet's nach Typen bearbeitet" (1859–61), "Revision critique des Phryganides decrites par M. Rambur d'apres l'examen des individus types" (1860), "Ueber Phryganiden-Gehäuse" (1864), "Phryganidarum Synopsis Synonymica" (1864), "Beiträge zur Kenntniss der Phryganiden" (1865), "Beiträge zur Kenntniss und Synonomie der Psociden" (1866), "Hemerobidarum Synopsis Synonymica" (1866), "Psocinorum et Embidinorum Synopsis Synonymica" (1866); papers on the insects, mainly Neuropterous, of various parts of Europe, Ceylon, Syria, Mozambique, Cuba, Madeira and America, of which the most important is the "Synopsis of the Neuroptera of North

America," written at the special request of, and published by the Smithsonian Institution in 1861; palæontological papers on European fossil and amber insects. But the greatest monument to his labor and patience is his "Bibliotheca Entomologica," a list of all the publications on the entire field of entomology up to 1862, grouped under author's names, these latter alphabetically arranged. The work is octavo size, and was published by W. Engelmann, Leipsic. Vol. I, 1862, 566 pages, runs from A to M; Vol. II, 1863, 512 pages, N to Z, with numerous indices and a vast amount of other useful bibliographical aids to the working entomologist. By the production of this work Dr. Hagen has earned the thanks of all future generations of students.

In the "Report of the Trustees of the Museum of Comparative Zoology at Cambridge" for 1867, Prof. Louis Agassiz wrote: "It gives me great pleasure also to state that I have been able to induce Dr. Hagen, of Kœnigsberg, to come over to Cambridge and assume the arrangement of the Department of Entomology. The loss of Mr. Uhler, who, to my great regret, was called away from us by his appointment as superintendent of the library of the Peabody Institute, at Baltimore, left a great hiatus in our organization. This blank is now filled, and the high position which Dr. Hagen holds among entomologists makes his presence among us not only of immense practical service to the Museum, but an honor also to the scientific character of the institution." Dr. Hagen was placed in charge of the Articulates in the Museum, and his first report thereon is included in the "Trustees' Report" for 1868. In it he says: "I arrived in Cambridge, Oct. 12, 1867, having come to this country in order to take charge of the collection of Articulates in the Museum of Comparative Zoology, and especially to rearrange the entomological collection," and in this report he presents a plan of arrangement. Some years later the Crustacea and Annelids were removed from his care, so that the Department of Insects was his sole charge. In the "Reports" for 1875, and later, his name appears as Professor of Entomology, on which subject he gave instruction to special students.

From May to October, 1870, he revisited Europe, one fruit of which was, as stated in his report for that year, that his own collection of Neuroptera and Pseudoneuroptera had reached this country, and had been deposited in the Museum. In this Cambridge possesses one of the finest collections of these groups in

the world, and which, for North American forms, is without a rival.

In 1879 he presented his entomological library of 762 volumes and 3000 pamphlets to the Museum. He spent the greater part of the Summer of 1882 in an economic survey along the line of the Northern Pacific Railroad, but especially in Washington.

From 1868 to 1890, Dr. Hagen's reports tell the same tale of unceasing work in the arrangement of the large and constantly increasing collections of insects acquired by the Museum, a very large part of which, tedious as it is, was performed by his own hands. Although for several years previous he had been unwell, in September, 1890, his health became so poor as to force him to abandon all work, and his last entomological paper, "Notes and Descriptions of some North American Libellulina" appeared in October of that year. Since then he steadily grew more feeble.

Dr. HAGEN'S most important publications during his residence in America were: "Monograph of the North American Astacidæ" [Crayfishes] (1871), "Synopsis Pseudoscorpionidum Synonymica" (1871), "Mimicry in Colors of Insects" (1872), "Beiträge zur Kenntniss der Phryganiden" (1873), "Synopsis of the Odonata of America" (1875), "Beiträge zur Monographie der Psociden" (1882–83), "On the Genus Colias" (1882), "Monograph of the Hemerobidæ" (1884–88), "Monograph of the Embidina" (1885), "Monograph of the earlier stages of the Odonata, subfamilies Gomphina and Cordulegastrina" (1885), "Stray notes on Myrmeleonidæ" (1887–88), and portions of Mr. L. Cabot's monograph "On the Immature state of the Odonata" (1872, 1881, 1890).

Dr. HAGEN was an excellent artist, and illustrated many of his own papers. Most of the plates in the monographs of the Odonata, written in conjunction with Baron de Selys, are his work, and many unpublished drawings exist among his papers at Cambridge.

Of Dr. HAGEN, personally, the writer can say little, but that is very pleasant. I met him but once, for parts of three days in July, 1890, at the Museum in Cambridge. Although unwell and obliged to rest frequently, he showed me his collection of Odonata, giving me types and other specimens. He was very hopeful of recovery, and talked of the work he would like to do next year. Referring to Westwood, Burmeister, Poey, Gundlach and de

Selys, all then alive and all older than himself, he laughingly said, "I am the baby at seventy-four." I may, perhaps, be permitted to add one other personality. In February, 1890, he sent me his unpublished notes on *Leucorhinia*, giving me permission to publish them, and when I wrote him for a title, he wrote "Synopsis of Leucorhinia" with my name as author, although the work was all his own. None but a generous man would have done so.

Dr. HAGEN belonged to an age that has passed away—when it was still possible to be an entomologist, as the four hundred and odd titles marking his fifty years of publication on all the orders sufficiently attest. His "Bibliotheca" and the entomological collections at Cambridge are the monuments of his life's work.

At the time of his death, Dr. HAGEN was the senior by election of the ten Honorary Fellows of the Entomological Society of London, having been elected to that body in 1863, one of the twelve honorary members of the Entomological Society of Belgium, and correspondent, or member of the American Entomological Society, Entomological Society of Stettin, Boston Society of Natural History and other scientific bodies.—P. P. C.

NOTE.—The portrait of Dr. Hagen published in this number of the NEWS is from a photograph taken when he resided in Kœnigsberg.

Note on the Genus Pseudococcus Westwood.

By T. D. A. COCKERELL.

According to Scudder (Nom. Zool., p. 266) the name *Pseudococcus* dates from 1848, but I find what appears to be its earliest publication in the "Modern Classification of Insects," vol. i (1839), p. 118. Here Westwood writes:

"*Pseudococcus* Westw. (*C. adonidum*, *cacti*, etc.), having the female not fixed, and clothed with a woolly secretion."

Of the two species mentioned, *adonidum* belongs to what we now call *Dactylopius* and *cacti* to *Coccus* sens. Signoret. The definition would fit several genera as now understood, but in the absence of any indication of a type species we should take *adonidum* as the type, as it is first mentioned.

However, in Mod. Class. Ins. vol. ii (1840), p. 448, all doubt on this score is removed, since we read that *C. ilicis* is to be considered the type of *Coccus;* and of *C. cacti*, the author states: "this insect . . . belongs to a genus . . . which I propose to

name *Pseudococcus*." No mention is here made of *adonidum*, and I think we may consider that *cacti* was certainly intended as the type of the genus.

It seems doubtful whether Westwood's name *Pseudococcus* can be used at all, as the restriction of *Coccus* L. to *cacti* and allied forms will probably be maintained by future authors; and as for *adonidum*, it belongs to *Dactylopius*, which was published in 1835. From this it appears that the "*Pseudococcus* Westw." of Signoret and modern writers is not the true genus of Westwood, but stands in need of a new name. I will suggest that it be called *Phenacoccus*—a word which has practically the same meaning as *Pseudococcus*.

Phenacoccus consists of Dactylopids which have in the female 9-jointed antennæ, and construct more or less distinct ovisacs. The following species have been described.

P. aceris Geoff. (Europe and North America), *P. mespili* Geoff. (Europe), *P. hederæ* Sign. (Europe), *P. platani* Sign. (Europe), *P. æsculi* Sign. (Europe), *P. brunnitarsis* Sign. (Europe), *P. fagi* Dougl. (Europe), *P. quercus* Dougl. (Europe), *P. ulicis* Dougl. (Europe), *P. ulmi* Dougl. (Europe), *P. socius* Newst. (Europe), *P. associalis* Newst. (Europe), *P. asteliæ* Mask. (New Zealand), *P. casuarinæ* Mask. (Australia), *P. nivalis* Mask. (Australia), *P. yuccæ* Coquill. (California), *P. helianthi* Ckll. n. sp. (N. Mex.).

———o———

NOTES ON ARGYNNIS CYBELE AND LETO.

By Henry Skinner, M.D.

It has been held by some Lepidopterists that *leto* is a Western form of *cybele* (Boisd. Lep. Cal. p. 60, 1869, Streck. Catl. p. 111, 187) I am not prepared to prove absolutely that they are one and the same species, but nevertheless I think such is the case. The Pacific coast examples of *leto* may be considered the typical form, being dark, almost black in the female (of course excepting the yellowish white border) and the inner area of all wings darker in the male. Specimens of *leto* from further East more nearly approach *cybele*, and in some specimens to such an extent as to make it almost, if not entirely impossible to say to which form they belong. I have one specimen of *leto* ♂ from St. Ignatius,

Mont., that does not differ at all on the upper side from *cybele*. The easternmost point from which I have received *leto* is the Yellowstone Park. A fair series of examples from the connecting territory (eastern Montana, Colorado, Nebraska, etc.) I think would absolutely connect these forms. I have received *cybele* from Colorado, but probably disposed of the specimens in exchange before I thought of their value for comparative study. It may be said that the females of the two forms are entirely different: this is true as a rule, but it is just this point I wish to mention. I have two females of *cybele* that do not essentially differ from the light yellow bordered females of *leto*, and I think any of our Lepidopterists would label them *leto* ♀ if he did not know the locality where caught. One specimen is from Binghampton, N. Y., and the other is from Spanish River on the Canadian shore of Lake Huron.* The latter was presented to me by Mrs. F. O. Herring, of Plainfield, N. J., who also has the form in her collection, and says it is common in the locality where taken. I also find that the examples of *leto*, taken by Capt. Geddes in Northwest Territory, more nearly approach *cybele* than do the coast examples of *leto*. I think in *cybele* and *leto* we probably have but one species with dimorphic females; the female in the West having a cream-colored border, and in the East being generally like the male. The territory where both females occur may eventually be found (if not already the Spanish River locality). This dimorphism is evidently geographical like that of *P. turnus*, only instead of being divided North and South like *turnus*, it is East and West. The latitude where both females of *turnus* abound is that of Philadelphia. I would be very glad to have any material or notes tending to confirm the relationship of *cybele* and *leto*.

Dr. W. J. HOLLAND, of Pittsburg, Pa., is doing excellent work on the West African Heterocera, and is illustrating all the new species he describes by the photo-mechanical method wherever the insects are suitable for this kind of work. Most of his illustrated papers have appeared in "Psyche." Dr. Holland is also working on a synonymic catalogue of the African Hesperidæ, which promises to be a work of great value to Lepidopterists.

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* Both specimens bright and fresh.

ON THE LARVAL CASES OF NORTH AMERICAN PSYCHIDÆ.

By HARRISON G. DYAR.

For more than fifteen years we have had on our lists the names *Oiketicus davidsonii*, *Psyche fragmentella* and *P. coniferella*, described from the larval cases only. For the sake of simplicity, it would seem advantageous that names of insects should be given to each species in a corresponding stage, preferably the mature form. It is puzzling to students, and introduces unnecessary complications to have names given in other than the final stage, but in the above instances the names have been given, not to any stage of the insect in question, but to the cases made by them in larval life. Still, provided the forms of the cases are characteristic, I would not suggest ignoring these names. It is the object of this paper to determine this matter.

Oiketicus davidsonii Hy. Edwards.

This cannot be an *Oiketicus*. In the species of which the cases are known to me (*O. abbotii*, *O. kirbyi*, *O. platensis*), the sticks with which the cases are strengthened are laid on transversely throughout. In this form they are laid longitudinally. The form seems characteristic by the length of the sticks used, some even longer than the case itself.

Psyche fragmentella Hy. Edwards.
coniferella Hy. Edwards.

From an examination of the cases in the Edwards collection, I am satisfied that these names refer to the same species. The cases are unlike any known to me. From the locality (Sierra Nevada of California) it also seems likely that the species is a good one. I see no reason for regarding it as belonging to the genus *Psyche*.

The following table will, perhaps, bring out the characters of the cases of our Psychids with reasonable clearness. Concerning *Psyche carbonaria* from Texas, nothing is known; but I do not think that it will prove the same as either of the species mentioned above. The species which I have referred to the Lacosomidæ are not included. Differing widely in structure of the perfect insect, they differ as much in the plan of structure of the cases. It would be as reasonable to include the case-bearing Microlepidoptera among the Psychidæ as these moths. I regard

Manatha edwardsii Heyl. as a synonym of *Platœceticus gloveri* Pack. "*Pseudopsyche*" *exigua* has been carelessly referred here. It can have little in common with the Psychidæ.

SYNOPSIS OF CASES.

Cases with sticks laid on thickly crosswise.
  Case about 35 mm. long . . . . . **Oiketicus abbotii.**
Cases with sticks laid lengthwise.
  With a few sticks only; the case largely of silk; length 50–60 mm. *species.**
  With more numerous sticks, often densely covered.
    Case 40 mm. long, with enormous sticks closely fastened. **davidsonii.**
    Cases 30–45 mm., the sticks shorter than the case.
      Case somewhat enlarged centrally . . . . **T. ephemeræformis.**
      Case smaller, cylindrical . . . . . **T. meadii.**
    Case about 11 mm. long, cylindrical, closely covered with rather long, overlapping sticks . . . . . **Psyche confederata.**
    Case much the same, but oval . . . . . **Platœceticus gloveri.**
Cases without sticks.
  Involucrum cylindrical, 11 mm. long, "omnio granis sabulosis obtectum" . . . . . **Chalia rileyi.**
  Case about 25 mm. long, covered with fine material, arranged lengthwise . . . . . **Psyche fragmentella.**

ENTOMOLOGICAL SOCIETY OF LONDON, Oct. 4, 1893.—"Mr. F. Merrifield exhibited specimens showing the effects of temperature in pupal stage on several Lepidoptera. *Vanessa polychloros* was much darkened, especially towards the hinder margin, by a low temperature. *Vanessa c-album* showed effects on both sides, especially in the female; they were striking on the underside. Several examples of the striking effect produced by temperature on the Summer emergence (*Prorsa*) of *Araschnia levana* were exhibited. Some *Vanessa io* showed the gradual disintegration, by exposure to a low temperature, of the ocellus on the fore wing, which in extreme specimens ceased to be an ocellus, and was a remarkable confirmation of Dr. Dikey's views of the origin of that ocellus. Mr. Goss stated that, in his experience of *V. c-album*, the form with the pale underside was the first brood, occurring in June and July; and that the second brood, from the end of July to October, was invariably darker on the underside." Similar interesting studies have been made in this country by Mr. W. H. Edwards and others. If our species of *Satyrus* were studied from a geographical series and from the different seasonal broods with the effect of cold and altitude borne in mind, a few names would probably fall into the second line.

* An undetermined species, probably also undescribed, from southern Arizona and New Mexico.

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PHILADELPHIA, PA., DECEMBER, 1893.

TO OUR SUBSCRIBERS.

WITH this number we finish volume iv of this journal. We have tried to make the NEWS as interesting and valuable as possible, and trust that in a measure we have succeeded. If you appreciate our efforts you can readily show it by doing all in your power to aid us in the work. Our endeavor has always been to enlarge and improve, and with your help we hope to continue in the same line. The NEWS started as a sixteen-page pamphlet and was not illustrated. It is now a journal of thirty-two or more pages a month,—the present volume will contain three hundred and forty-four pages, and half of this is small, or brevier type. We have published one or more illustrations in each issue, thus making the NEWS the only regularly illustrated entomological journal in the world which is published so frequently. In conclusion, we extend to you our best wishes for the coming new year, hoping it may prove, personally to each, a prosperous one, and that all of you may continue to show your appreciation of ENTOMOLOGICAL NEWS by promptly renewing your subscriptions for 1894.

FREE AUTHORS' EXTRAS.

To further accommodate our subscribers and contributors to the NEWS, we have decided to give twenty-five author's extras free to those requesting them. The fact that they are desired should be stated on the manuscript. This applies to papers only, and not items of news, etc. If a greater number of extras is wanted, or if authors wish the matter of their papers made over so as to be separated from other matter, they should make arrangements directly with our printer and pay his charges; otherwise, the sheets will be sent out as they appear in the NEWS.

DEPARTMENT OF ECONOMIC ENTOMOLOGY.

Edited by Prof. JOHN B. SMITH, Sc. D., New Brunswick, N. J.

A Few Notes on Cranberry Insects.—The cranberry industry is one of the most important in parts of Massachusetts and parts of New Jersey, and the cultivation of this fruit is extending to the West. It has already become of considerable importance in Wisconsin, and plantations have been started in the State of Washington. Recently, the horticulturist of the Wisconsin Station has published a bulletin on the insects and diseases of the cranberry, based almost entirely on work done at the New Jersey Station by the botanist and entomologist there. In August last I had an opportunity of conversing with Mr. Goff, at Madison, Wis., and he informs me that in some respects there seems to be a little difference in habit of some of the insects, and particularly in the case of the *Teras vacciniivorana*. In New Jersey and on Cape Cod it is well known that this insect is dimorphic, and that there is a fall brood, which is slate colored and lives through the Winter, and that there are two Summer broods, both of which are orange colored. The interesting point seems to be, that this orange colored brood is entirely wanting in Wisconsin, and that only the slate colored form exists there. The evidence upon which this statement is made, is not entirely beyond question, but it is very likely indeed to prove correct, from what we know of the actions of other insects in similar climatic conditions.

A point of some interest in connection with the new bogs that have been started in Washington is, that I have received from that place specimens of the "Fire-worm," the larva of *Rhopobota vacciniana*, the insects being transmitted to me through the agency of the secretary of the American Cranberry Growers' Association. Investigations made at my request show that the vines which were set out on the Washington bog were obtained from Massachusetts, and there is almost no room for doubt that the vines so set out contained the eggs of this insect, which are laid in the fall and do not hatch until well along next Spring. If, as is usual, the plants were collected any time after mid-Summer, or early in the fall, and were set out in fall or in Spring, there would be no difficulty whatever in the hatching out of the larva from the eggs in Washington. I have no information as to how widespread this insect is in its new quarters, but I have not the shadow of a doubt that it will make itself at home in the new region, undergoing perhaps some little modifications, and that it may be even more injurious in its new home than it is with us in the East. Referring to the matter of modification, it is a matter of some interest that even in the specimens sent me, all the markings stand out very much more brightly than they do in any Eastern specimen that I have ever seen. It would pay the cranberry growers in this new region to make a very careful investigation of how far this insect has already spread. It is scarcely likely that it ex-

ists in any very great quantities as yet, and it may be that it can be destroyed by sacrificing the chance of a crop for one year, and so entirely excluded from that region, unless again brought in on plants from the East. The easiest way to accomplish this, if the bogs are properly laid out, would be to reflow well along in the Spring, after there has been a general hatching of the larva all through the infested bogs. The experience that I have had, and the results of the experience of others, has shown that we cannot depend upon insecticides for the absolute destruction of any insect of this character; while on the other hand, a measure such as I have suggested, is likely to prove completely successful. We have here another illustration of the importance of carefully looking over plants that are purchased from one region of our country to be set out in a new place. Had the person who purchased the Eastern plants known of the danger of introducing also the injurious insects it would have been, comparatively speaking, an easy task to destroy the insects that were on the plants while yet in the egg stage and before they were set out. It would have paid to have taken each plant separately, before it was set out, and examined every leaf for eggs. They are not difficult to see, and it would have been only a fraction of a minute for each spray to be examined. I quite expect that nothing will be done and that the cranberry growers in Washington will make for themselves an enormous amount of work to be attended to in the future. They are providing themselves with a tax which will be levied upon them without any action or will of their own, and which they will in time spend thousands of dollars to get rid of, where a few hundred at the outside, expended at the present time, would secure them future immunity.

The Pear Psylla in New Jersey.—A short time ago Prof. Beckwith, of the Delaware Experiment Station, wrote me that he had found specimens of this insect in Burlington County, N. J., and at my request sent me some specimens. These I forwarded to Mr. Slingerland, as they were immature, and received from him the assurance that Prof. Beckwith was correct, and that this was really the pear Psylla. This is the first time that the insect has come to my notice from New Jersey. As soon as possible I communicated with the growers in whose orchard the insect had been found, and afterward visited the nursery, which is one of the most extensive in that part of New Jersey, and whose owners are also of the most intelligent class of men engaged in business of this description, and are strictly entitled to be called successful farmers. So far as I can see from the examination made, the insect is as yet confined to this orchard, and indeed, to only a comparatively limited part of it. It is certain that we have not to do here with a normal spread, but rather with an introduction. These gentlemen import each year a considerable number of young trees from different parts of the country, and among other places northern New York furnishes a large number of pear trees. Mr. Slingerland's work has informed us that in some parts of the State of New York this insect has been exceedingly injurious for two or three years back, and

from the localities in which he found it abundant stock was imported into this orchard on the Delaware. Judging from the number of specimens found, and from the territory which this insect seems to have covered, it is reasonably certain that it has been in its present location at least two years, and quite enough specimens were observed to make it probable that next year, under ordinary circumstances, a considerable spread from this orchard will take place. Fortunately, the owners of the orchard in question are intelligent men, and men who realize the importance of dealing promptly in matters of this kind. They have therefore agreed to take active measures, recommended by me, during the ensuing Winter and early next Spring, and there is reasonable hope that it will be possible to check the further spread of the insect, and to reduce its numbers to such an extent, that we may reasonably hope that the survivors will fall victims to natural causes. We are not unreasonable in expecting the latter, because heretofore the insect seems not to have shown any tendency to migrate in the direction of the location where it has just been found. It behooves fruit growers and farmers generally who purchase plants, trees, grafts, or the like, from any locality other than their own, to make a most careful examination of the plants before they set them out, to make sure that no insects are introduced with them. It is carelessness in this respect that has given us some of our most troublesome insects, and it has been the almost universal experience that where an insect was introduced and showed itself capable of multiplying that such species become the most difficult to deal with.

A "Rose Bug" Remedy.—In the 5th Report of the Board of Managers of the Rhode Island College, we find in the Report of the horticulturist: "A Remedy for the 'Rose Bug.'" This remedy is nothing except a thorough spraying with the Bordeaux mixture, to which Paris-green was added in considerable quantities. This, it seems, rendered the vines unpleasant to the "rose bugs" and they ceased feeding upon them. Reports of this kind have been made before, and I do not for an instant question their accuracy, but there are as many cases equally authentic where the remedy has proved no remedy at all. I have myself seen "rose bugs" feeding upon foliage and buds that were completely covered with the Bordeaux mixture, and it did not even seem to disagree with them. It only emphasizes what has been already stated elsewhere concerning this insect, that when it appears in reasonable numbers it is not difficult to keep it from grape, and a dusting with lime, or in fact a considerable number of other substances, will prove reasonably effective. It is when they appear in such enormous swarms that everything is covered with them, that all remedies fail as completely as do all signs of rain in times of drought. Then, apparently, they will eat everything that is in the way, and it makes no difference what poison is used.

Notes on some Ptinid Pests.—Insects injurious to vegetation do not always confine their attacks to growing plants; but sometimes cause con-

siderable trouble to stored products of a vegetable origin, and this whether it be a leaf, branch, trunk or root. Nothing is sacred to the insects, and without care everything will find a pest to attack it. The botanists and druggists find that they must use caution in preserving their pressed and dried plants and herbs from the attacks of certain species of insects, and even poison does not always act as a saviour. A great number of the species that belong in the category of pests that feed upon dry vegetable matter, are members of the Coleopterous family Ptinidæ, and none of the members of this family have a worse and better deserved reputation than *Lasioderma serricorne* and *Sitodrepa panicea*. The first of these, owing to the frequence of its attacks upon tobacco, has locally received the name "tobacco beetle," feeding upon dried tobacco in all its stages. It is elsewhere called the "cigarette beetle," and as such has been classed among the beneficial insects. There might be some justice in this were it not for the miserable habit that the insect has of also attacking cigars, which, to some entomologists, are as much a necessity as food and drink. A very good second to the *Lasioderma* is the *Sitodrepa*, although this is not so commonly known as a tobacco-feeding insect; but this means nothing, for it has a decided catholic taste, and it will feed upon gunwads and belladonna quite as readily as it will upon tobacco. To my friend, Mr. J. Turner Brakeley, Bordentown, N. J., I owed at one time part of a box of cigars. I felt very grateful to him until I examined them carefully, and found that it was not to the friend, but to the entomologist that he had sent them, for they all looked very much like the specimens of which a figure is here presented. Every one of them had anywhere from three to ten or a dozen little round holes from which the beetles had emerged, and the exterior proved to be very much better than the interior, for in the majority of cases a large proportion of the inside of the cigar, or filling, had been eaten away, and only chips and frass remained, mocking all attempts at smoking, even after the holes had been pasted up. Very much the same sort of attack is made by the *Lasioderma* not only upon cigars, but upon plug tobacco, and at one time there was quite a disturbance among certain tobacco manufactures in one of the Southern States over the unusual increase of this pest in their factories. Specimens were sent to the National Museum to obtain information on the subject, and some good samples ought to be in that institution. The differences between the *Lasioderma* and the *Sitodrepa* are very readily discovered, and are indicated in figures 1 and 2. The *Lasioderma* is the larger insect, very much broader comparatively, with a smooth surface, the elytra not striate, but clothed with fine silky hair, which shows a tendency to arrange itself into distinct rows. The antennæ have the joints subequal, and no very strongly marked antennal club. In the *Sitodrepa*, on the contrary, we have a narrower, more elongate insect, with the elytra distinctly striated. The antennæ are quite different, and have a distinct three-jointed serrated club. The larvæ of the two species look very much alike, and are white, fleshy, wrinkled grubs, which are usually curled up as shown in

figure 3. In drug houses the *Lasioderma* and *Sitodrepa* both become very injurious on occasion, and question is not infrequently made for a

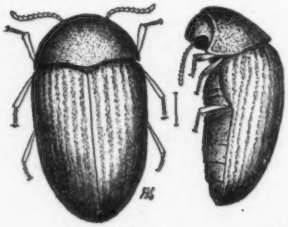


Fig. 1.

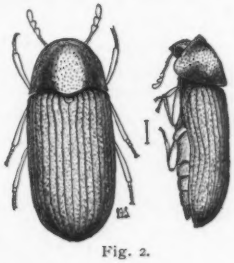


Fig. 2.

Fig. 3.

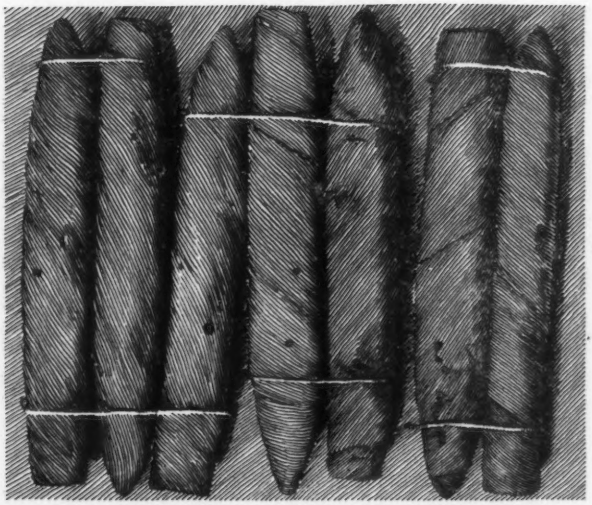


Fig. 4.

Explanation to Figures: 1, *Lasioderma serricorne;* 2, *Sitodrepa panicea;* 3, *Sitodrepa panicea* larva; 4, Injury to cigars.

remedy. Of course, in the preservation of all vegetable matter when dried, nothing is better than to be sure in the first place that the material

is not infested, and then preserve either in glass jars or in tight tin boxes. Almost anything else these insects will bore through. When glass or tin are not available, or cannot be used for any reason, it has been found that a liberal use of naphthaline will keep out the insects fairly well, and where the material has become infested, naphthaline usually checks further increase, though it does not kill the specimens themselves. Wherever the material will not be injured thereby, exposure to the fumes of carbon disulphide is the most satisfactory method of getting rid of the insects; but a beetle that will attack the entomologist's cigars is mean enough for anything, and must be closely watched.

Fungi versus Insects.—In "Science" for October 20th, Mr. Gerald McCarthy has a paper under the above title, in which there is really nothing new, nor anything newly stated. But it presents on one hand the fact that we cannot hope to make any permanent impression upon injurious insects by our present methods, unless they are much more generally adopted, and on the other hand suggests that we have in the cultivation of fungous and bacterial diseases the probable remedy of the future. Now, it is undoubtedly true, as he suggests, that our application of insecticides is not so efficient as it might be, but that is not due in all cases to the practice itself; only to the fact that it is not universally and properly applied. It is beyond reasonable doubt that if, for only three years in succession, every farmer and other tiller of the soil within the boundaries of the United States, would make intelligent and conscientious use of the remedies that we have against the Codling moth, that within that time the insects would be so reduced in number, that for a long time to come they could not be ranked as injurious, and in some places might be even exterminated. That farmers do not adopt these measures is no proof that they are not practical, nor that they are not efficient. In fact, we can say that they are not only practical, but that they are absolutely certain. Our effort should be, therefore, to convince the farmer of the importance of adopting these remedies, and we should try to educate him to the point that he will himself see that it will pay him to use every possible method to clear out these pests. By a system of legislation we may be able to reach the ignorant or stubborn specimen and force him to look after his own interests, so that we can look forward to a time in the future when insect pests will cause little practical injury. Now this suggested remedy for using fungous diseases to destroy insects has a very tempting sound, and in some cases it would undoubtedly prove successful; but, really, those cases are rare, and depend upon so many factors of which we practically know nothing; or which, when we do know them, are beyond our control, that we could never tell beforehand what the result is going to be. Practical experience has shown that diseases which attack one species will, very frequently, pass by even a very closely allied one, and we have seen, too, that for some years in succession diseases have carried off insects of certain kinds by the wholesale, while for a long series of years afterward they were practically exempt. Insect diseases, like a good

many other things, have also a fashion of attacking pests *after* they have caused injury to the farmer, and somehow or other, no matter how violent a disease may be this year, it does not seem to have any effect upon the number of insects that make their appearance the year following. Then there are a large number of our most injurious insects beyond the reach of fungous diseases from their habits of life. What hope can we have of reaching, for instance, the Plum Curculio larva, or that of the Codling moth, both of which live inside the fruit which they infest, and are entirely sheltered from the outer air and from the spores that could be carried even to the very fruit that they inhabit. The truth is, that fungous and bacterial diseases will be found to have a field, and that within certain limitations we can make them decidedly useful; but that they will ever replace poisons for many species is a question which, to me at least, seems exceedingly doubtful. Natural means check insect life and prevent undue increase; they can never be used to destroy completely the form of life upon which they prey. If we desire to do that we must use means other than those provided by nature itself.

Notes and News.

ENTOMOLOGICAL GLEANINGS FROM ALL QUARTERS OF THE GLOBE.

[The Conductors of ENTOMOLOGICAL NEWS solicit, and will thankfully receive items of news, likely to interest its readers, from any source. The author's name will be given in each case for the information of cataloguers and bibliographers.]

To Contributors.—All contributions will be considered and passed upon at our earliest convenience, and as far as may be, will be published according to date of reception. ENTOMOLOGICAL NEWS has reached a circulation, both in numbers and circumference, as to make it necessary to put "copy" into the hands of the printer, for each number, three weeks before date of issue. This should be remembered in sending special or important matter for certain issue. Twenty-five "extras" without change in form will be given free when they are wanted, and this should be so stated on the MS. along with the number desired. The receipt of all papers will be acknowledged.—ED.

ABOUT a year ago we published a request for photographs for the album of the American Entomological Society and up to date have received eighty pictures. Those not previously acknowledged are from Dr. Emil Brendel, Chas. W. Johnson, Rev. C. J. S. Bethune, Richard F. Pearsall and Miss Mattie Wadsworth. We still have room for many more and again ask all interested in entomology to send in their pictures irrespective of whether they have written on entomological subjects or not.

Mr. HERBERT DRUCE, the well-known student of the exotic Heterocera, has been visiting this country, and has seen some of our large collections, in which he was much interested. He spent some time with Dr. Holland, of Pittsburgh, and Mr. Neumoegen, of New York, and also visited the American Entomological Society.

TRANSACTIONS of American Entomological Society, 1893.—The following papers have been published since the issue of No. 3: Notes on Bees, with descriptions of new species, by Charles Robertson; Notes and descriptions of Pselaphidæ, with remarks on the Scydmænidæ, by E. Brendel, M.D., one plate; A Synopsis of the Harvest-Spiders (Phalangiidæ) of South Dakota, by C. M. Weed, one plate; The Cosmetidæ of the United States, by C. M. Weed, one plate; Contribution to a Knowledge of certain little-known Aphididæ, by C. M. Weed, one plate; The Entomology of the Mid-alpine zone of Custer County, Colorado, by T. D. A. Cockerell (in press).

LESTES EURINUS.—The statement in the NEWS for November, p. 308, that I presented specimens of *Lestes eurinus* from *Texas* is incorrect, as they came from Massachusetts. The known localities for this species are Massachusetts, New York and Illinois, as stated in my Philadelphia Catalogue (Trans. Am. Ent. Soc. xx, p. 229, 1893).—PHILIP P. CALVERT.

Prof. JOHN B. SMITH is a frequent visitor to the meetings of the Feldman Collecting Social of Philadelphia, where, after the scientific meeting has adjourned, the members have a pleasant time socially, and discuss the good things of this life around the table. The meetings are held at the home of Mr. H. W. Wenzel, the well-known Coleopterist. Mr. Laurent is president of the Club and Mr. Schmitz, secretary.

Mr. W. J. FOX, of the Academy of Natural Sciences, Philadelphia, is at work on a monograph of the Hymenopterous group Larriens of North America, and has nearly completed it. The number of species will be nearly doubled and several new genera added.

IT is said that many specimens of the rare *Papilio homerus*, of Jamaica, have been recently sent to England. This species is probably only represented in collections in this country by three individuals.

Mr. OTTO HERZ, naturalist to His Imperial Highness, the Grand Duke Nicolas Michailowitsch, of Russia, is anxious to obtain for the collection of His Imperial Highness certain rare American Lepidoptera. Among the species desired are *Papilio aliaska*, *Parnassius eversmanni* and its variety *thor*, and *Colias boothii*, which was described from the Second Ross Expedition.

Mr. PHILIP LAURENT, of Philadelphia, is interested in Entomological Photography, and made the negative for the plate in the last number of the NEWS.

IT is stated by Mr. South in the "Entomologist" for November, 1893, that a specimen of *Chrysophanus phlæas*, captured in Middlesex, England, is the form described by Strecker from American examples. "Intermediates between var. *fasciata* and the type are not rare in Britain, and Mr. Sabine captured three examples this year." We believe it was heretofore supposed that *fasciata* did not occur except in America.

Prof. C. H. T. TOWNSEND, curator of the Institute of Jamaica at Kingston, has recently been elected a Fellow of the Entomological Society of London.

WE have just received the great work on the Proctotrypidæ of North America by Mr. W. H. Ashmead, of the Department of Agriculture at Washington, D. C. Nearly 700 species are treated. It is a work of nearly 300 pages. It will be noticed later in the literary review.

THE recent addition to the fine collection of Mr. B. Neumoegen, of New York, will run up into many thousands of specimens from all parts of the world.

Identification of Insects (Imagos) for Subscribers.

Specimens will be named under the following conditions: 1st, The number of species to be **limited to twenty-five** for each sending; 2d, The sender to pay all expenses of transportation and the insects to become the property of the American Entomological Society; 3d, Each specimen must have a number attached so that the identification may be announced accordingly. Exotic species named only by special arrangement with the Editor who should be consulted before specimens are sent. Send a 2 cent stamp with all insects for return of names. Before sending insects for identification, read page 41, Vol. III. Address all packages to ENTOMOLOGICAL NEWS, Academy Natural Sciences, Logan Square, Philadelphia, Pa.

Entomological Literature.

ANNALES DE LA SOCIETE ENTOMOLOGIQUE DE FRANCE, lxi, 1. Paris, July 20, 1892.—On the American Oestridæ, whose larvæ live in the skin of man, Dr. R. Blanchard, figs. Study of the cavernicolous Arthropods of the island of Luzon: Coleoptera, A. Raffray; Orthoptera, I. Bolivar; Arachnida, E. Simon.—2, Oct. 12, 1892. Contribution to the microscopic study of the larval nervous system of *Stratiomys longicornis* Sc., F. Henneguy and A. Binet, 1 pl.—3, Dec. 28, 1892. New, or little-known Diptera, J. M. F. Bigot.—4, April 28, 1893. Revision of the Pselaphidæ of Sumatra, A. Raffray, 1 pl. Additional notes on the American Oestridæ, whose larvæ live in the skin of man, R. Blanchard (pp. ccix, ccxlvi).

ACTES DE LA SOCIETE LINNEENNE DE BORDEAUX, xlv, 1893.—On the habits of some Hymenoptera of Provence of the genus *Osmia* Panzer, C. Ferton. On artificial fecundation of *Cantharus griseus*, M. Kunstler.

ANNALS OF THE NEW YORK ACADEMY OF SCIENCES, viii, 1–3, July, 1893.—The Myriapoda collected by the United States Eclipse Expedition to West Africa 1889 and 1890, O. F. Cook and G. N. Collins, 2 pls. Studies on the life-histories of some Bombycine moths, with notes on the setæ and spines of certain species, A. S. Packard.

THE BRITISH NATURAIST. London, October, 1893.—British spiders (cont.), Rev. F. O. P. Cambridge.

BULLETIN OF THE MUSEUM OF COMPARATIVE ZOOLOGY AT HARVARD COLLEGE, XXV, 1. Cambridge, Mass., September, 1893.—The Orthoptera of the Galapagos Is., S. H. Scudder, 3 pls.

MEMORIAS Y REVISTA DE LA SOCIEDAD CIENTIFICA "Antonio Alzate," vi, 11 and 12. Mexico, 1893.—A new species of *Lecanium* from Mexico, T. D. A. Cockerell.

BULLETIN FROM THE LABORATORIES OF NATURAL HISTORY, State University of Iowa, ii, 4. Oct. 9, 1893.—Description of the early stages of several North American Coleoptera, H. F. Wickham.

DELAWARE COLLEGE AGRICULTURAL EXPERIMENT STATION. Bull. No. xxi. Newark, Del., September, 1893.—Insects injurious to stored grain, M. H. Beckwith, figs.

ENTOMOLOGISCHE NACHRICHTEN, xiv, 19. Berlin, October, 1893.—Cecidiological notes, Dr. F. Thomas.—xiv, 20, October, 1893. Remarks on the "Catalogus Coleopterorum Europæ, Caucasi et Armeniæ Rossicæ," ed. E. Reitter, E. Bergroth. Species and subspecies in entomology, E. Hartert. The genus *Harpobittacus* Gerst., R. McLachlan.

ANNUAL REPORT OF THE MAINE STATE COLLEGE AGRICULTURAL EXPERIMENT STATION [at] Orono, Me., 1892. Bangor, 1893.—Report of botanist and entomologist, Prof. F. L. Harvey, figs.

LA NATURALEZA. Periodico Cientifico de la Sociedad Mexicana de Historia Natural. (2) II, 3 and 4. Mexico, 1892.—A new *Ixode*, Dr. D. A. Duges, 1 pl. The "Tlalzahuatl" [larva of *Trombidium* sp.], id. *Acanthia inodora*, id.

SCIENCE. New York, Oct. 13, 1893.—On the systematic position of the Diptera, A. S. Packard. Notes of some experiments on the house-fly, J. B. Smith.—Oct. 20. Silk-spinning fly larvæ, H. Garman. Fungi *versus* insects, G. McCarthy.

BULLETIN DES SEANCES DE LA SOCIETE NATIONALE D'AGRICULTURE DE FRANCE, 1893, No. 7. Paris, July, 1893.—Ravages caused by a sack worm (*Psyche atra*) in the highlands of Auvergne, M. Laboulbene.

THE ANNALS AND MAGAZINE OF NATURAL HISTORY. London, October, 1893.—A few synonymical notes upon African Lepidoptera, W. J. Holland. Notes on the classification of scorpions, followed by some observations upon synonymy with descriptions of new genera and species, R. I. Pocock, 2 pls.

THE VICTORIAN NATURALIST. Melbourne, September, 1893.—A catalogue of Victorian Heterocera, part v, O. B. Lower.

ZEITSCHRIFT FUR NATURWISSENSCHAFTEN, lxvi, 1 and 2. Leipsic, 1893.—Plant-lice and honey-dew, Dr. G. Brandes. Remarks on Dr. Eckstein's "Pflanzengallen und Gallenthiere," Dr. D. von Schlechtendal.

PROCEEDINGS OF THE ACADEMY OF NATURAL SCIENCES OF PHILADELPHIA, 1893, pt. II, April–September. Oct. 31, 1893.—Descriptions of two new species of North American Bombycidæ, H. Strecker.

THE GARDENER'S CHRONICLE. London, Oct. 21, 1893.—How Red Spider was got rid of, W. Miller ["red brick cure"].

PROCEEDINGS AND TRANSACTIONS OF THE LIVERPOOL BIOLOGICAL SOCIETY, vii, 1893.—The occasional phenomenal abundance of certain forms of insect life, W. E. Sharp.

ZOOLOGISCHER ANZEIGER. Leipsic, Oct. 16, 1893.—On the stigmata of the larva of *Melolontha*, J. E. V. Boas, figs. An attempt at an explanation how some flies can float in one point in the air, Dr. L. Car. Contributions to knowledge of the Hydrachnidæ, R. Piersig.—October 30. On the copulatory organs of the Libellulidæ, J. Ingenitzky. Are the homologues of the laminæ basales of male Coleoptera present in Hymenoptera? C. Verhoeff.

TIDJSCHRIFT VOOR ENTOMOLOGIE, XXXV. The Hague, 1892.—Tabular review of the Donaciini taken in the Netherlands, Dr. E. Everts. Remarks on collecting and preserving insects in the tropics, J. Z. Kannegieter.

OPUSCULA ENTOMOLOGICA edidit C. G. Thomson. Fasc. xvii. Lund, 1892.—Contributions to the knowledge of the Braconidæ [of Europe]. Fasc. xviii, 1893. On [European] Ichneumonidæ.

BIHANG TILL KONGL. SVENSKA VETENSKAPS-AKADEMIENS HANDLINGAR 17 Bd., Afd. iv, No. 8. Stockholm, 1891.—Contributions to the knowledge of Californian Collembola, H. Schött, 4 pls.

PROCEEDINGS OF THE CALIFORNIA ACADEMY OF SCIENCES (2), iv. San Francisco, 1893.—On a collection of Formicidæ from Lower California and Sonora, Mexico, T. Pergande.

EVIDENCE of Mr. James Fletcher, entomologist and botanist, before the select standing committee of the House of Commons on agriculture and colonization, session of 1893; 25 pp. [Economic Entomology, Ottawa, 1893.]

CENTRAL EXPERIMENTAL FARM.—Report of the entomologist and botanist (James Fletcher) for 1892; 25 pp., figs. [Economic Entomology,] Ottawa, 1893.

THE KANSAS UNIVERSITY QUARTERLY, II, 2. Lawrence, Kans., October, 1893.—The sclerites of the head of *Danais archippus* Fab., V. L. Kellogg, 1 pl. New, or little-known Diptera, S. W. Williston.

REVISION DE LA TRIBU DES HETEROGAMIENS [fam. Blattidæ], par H. deSaussure. Extract Revue Suisse de Zoologie, I, pp. 289–318. Geneva, 1893.

PROCEEDINGS OF THE U. S. NATIONAL MUSEUM, xvi, No. 950. Washington, 1893.—A descriptive catalogue of the harvest-spiders (Phalangiidæ) of Ohio, C. M. Weed, 3 pls.—No. 951. Scientific results of the U. S. Eclipse Expedition to West Africa, 1889-90. Report on the Insecta, Arachnida and Myriapoda, C. V. Riley; including descriptive papers on the Odonata, P. P. Calvert, figs., and Araneina, N. Banks, figs., and G Marx, 1 pl.

ZOE, iv, 3. San Francisco, Sept. 19, 1893.—The species of *Amblychila*, J. J. Rivers, 2 pls.

PSYCHE. Cambridge, Mass., November, 1893.—The primitive number of Malpighian vessels in insects, vi, W. M. Wheeler. Note on a Scuttelerid on native tobacco in Arizona, C. H. T. Townsend. Descriptions of new species and genera of West African Lepidoptera, x, W. J. Holland, 2 pls. Descriptions of new aculeate Hymenoptera, W. J. Fox.

BULLETIN OF THE AMERICAN MUSEUM OF NATURAL HISTORY, v, pp. 241 *et seq*. New York, October, 1893.—Descriptive catalogue of the butterflies found within fifty miles of New York City, together with a brief account of their life-histories and habits, W. Beutenmüller.

JAHRBUCHER DES NASSAUISCHEN VEREINS FUR NATURKUNDE. Jahrgang 46. Wiesbaden, 1893.—*Ornithoptera schoenbergi* n. sp. from the Malay Archipelago, Dr. A. Pagenstecher, 3 pls. A lepidopterological voyage around the world, Dr. A. Seitz.

COMPTE RENDU. SOCIETE DE BIOLOGIE. Paris, Oct. 27, 1893.—*Sphex splendidulus* da Costa [larval development], M. Nicolas.

THE ENTOMOLOGIST'S RECORD. London, Oct. 15, 1893.—The President's address to the British Association considered in its relation to entomology, J. W. Tutt. On the larva of *Arctia caia*, with special reference to its correlated variations in plumage, moulting and hybernation, T. A. Chapman, M.D.

THE CANADIAN ENTOMOLOGIST. London, Ont., November, 1893.—The late Professor Westwood, Ed. The fourth annual meeting of the Association of Economic Entomologists [with brief abstracts of the papers read]. List of Coleoptera taken at Sparrow Lake, Ont., J. Hamilton, M.D. New North American Homoptera, No. vi, E. P. Van Duzee. Notes on a polymorphic butterfly, *Synchlæ lacinia* Geyer (in Hub. Zutr.), with description of its preparatory stages, W. H. Edwards. On a seemingly microlepidopterous leaf-miner of the narrow-leaved cottonwood, C. H. T. Townsend. *Hyblæa puera* Cramer, T. D. A. Cockerell.

THE OTTAWA NATURALIST, November, 1893.—Fauna Ottawaensis, Hymenoptera Phytophaga, W. H. Harrington.

EVOLUTION AND TAXONOMY.—An essay on the application of the theory of Natural Selection in the classification of animals and plants, illustrated by a study of the evolution of the wings of insects and by a

contribution to the classification of the Lepidoptera. By John Henry Comstock, B. S. Reprinted from the Wilder Quarter-Century Book. Ithaca, N. Y., 1893. Pp. 37–114, 3 pls., 33 text-figures. Part I of this interesting essay is A proposed method stated; Part II. The evolution of the wings of insects; Part III. A contribution to the classification of the Lepidoptera. The author says: "I do not believe that the systematists of to-day are making as much use of the theory of descent in taxonomic work as they might. We are still busy describing species as if they were immutable entities; and in our descriptions we give little thought to the causes that have determined the forms of organisms. It is true that considerable has been done in the direction of working out the phylogeny of the larger groups, as branches and classes, and to a less extent of orders. But rarely is any attempt made to determine the phylogeny of the smaller groups. Here I believe lies the work of the systematist of the future. The description of a species, genus, family or order, will be considered incomplete until its phylogeny has been determined so far as is possible with the data at hand. We are to care less for the mere discovery of new forms, and more for an understanding of the processes by which new forms have arisen. . . . I suggest, therefore, that the logical way to go to work to determine the affinities of the members of a group of organisms is first to endeavor to ascertain the structure of the primitive members of this group; and then endeavor to learn in what way these primitive forms have been modified by natural selection, keeping in mind that in each generation those forms have survived whose parts were best fitted to perform their functions." Prof. Comstock proceeds to practically exemplify his method by endeavoring to determine the phylogeny of the Lepidoptera, but his essay will be of interest to entomologists generally. We emphatically endorse his views as above quoted, and recommend them to the attention of students of our science.

THE ENTOMOLOGIST. London, November, 1893.—Variation of *Chrysophanus phlæas* in Britain, R. South, 2 figs. The "Melanism" controversy, W. F. de Vismes Kane. On certain species of North American Hypenidæ, A. G. Butler. Observations on the Hessian-fly (*Cecidomyia destructor*) during 1893, F. Enock.

NEW SPECIES OF NORTH AMERICAN INSECTS DESCRIBED IN THE PRECEDING LITERATURE.

ACARINA.

Gonixodes rostralis Duges, Naturaleza (2) II, p. 164, pl. viii, fig. 1, Guanajuato, Mex.

COLEOPTERA.

Halecia pyropus Kerremans, Ann. Soc. Ent. Belg. xxxvii, p. 504, Guadeloupe. *Psiloptera* (*Lampetis*) *auropunctata*, p. 507, Mex.

DIPTERA.

Bombylidi: n. spp. Bigot, Ann. Soc. Ent. France, lxi, pp. 321–377.

Various families: n. spp., U. S., Williston, Kans. Univ. Quart. II, pp. 59–78.

HEMIPTERA.

Lecanium schini (Lichtenstein MS.) Cockerell, Mem. Revist. Soc. Cien. Antonio Alzate, vi, p. 325, Guanajuato, Mex.

Acanthia inodora Duges, Naturaleza (2), II, p. 169, pl. viii, figs.

Homoptera: n. spp., U. S., Van Duzee, Can. Ent. xxv, pp. 280–285.

HYMENOPTERA.

Formicidæ: n. spp., Lower Cal., Mex., Pergande, Proc. Cal. Ac. Sci. (2), iv, pp. 26–36.

Larridæ: n. gen. et spp., U. S., Fox, Psyche, vi, pp. 553–556.

LEPIDOPTERA.

Cossus orc Strecker, Proc. Ac. Nat. Sci. Phila. 1893, p. 282, Wash. *Hepialus Los* id., l. c., Me.

PANORPINA.

Bittacus chlorostigma McL. = *Harpobittacus c.*, *Apterobittacus* n. gen. or *B. apterus* McL., McLachlan, Ent. Nach. xiv, p. 317.

THYSANURA.

Collembola: n. gen. et spp., Calif., Schött, Bih. K. Sven. Vet.-Akad. Hdlgr. Bd. 17, Afd. iv, No. 8.

The Entomological Section

ACADEMY OF NATURAL SCIENCES, PHILADELPHIA.

PROCEEDINGS OF MEETINGS.

OCTOBER 26, 1893.

A regular stated meeting of the Entomological Section of the Academy of Natural Sciences was held in the Hall, S. W. cor. Nineteenth and Race Streets this evening, Mr. E. T. Cresson presiding. Members present: E. T. Cresson, Calvert, G. B. Cresson, Seiss, Welles, Laurent, Johnson, Skinner, Ridings, Liebeck. Associates: Fox, Boerner, Westcott. Mr. Laurent exhibited a very beautiful moth, which he stated, as far as he knew, had never before been reported from Pennsylvania or New Jersey. It belongs to the Geometers, and the species is *Plagodis keutzingaria*. The speaker also exhibited an exceedingly dark specimen of *Samia cynthia* which had been reared in the city. Mr. Calvert exhibited specimens of an unknown lepidopterous larva in alcohol. Mr. C. W. Johnson exhibited a photograph showing the injury done to the pine in Pennsylvania

by a beetle belonging to the Scolytidæ. The injury began in 1891, and the insects attack the live trees and begin at the top and work down. They have also been very destructive in West Virginia. Mr. Hopkins, of the West Virginia Station, has introduced a species of Cleridæ from Europe, which is destructive to the injurious Scolytids. A number were set loose in 1892 at Morgantown, W. Va. Mr. Johnson found an American species of Cleridæ destructive to the Scolytidæ. Mr. Wm. J. Fox called attention to a collection of Hymenoptera made in the White Mountains of New Hampshire by Mrs. A. T. Slosson, of New York. The collection contained two species of more than usual interest, one of which, *Melinus bimaculatus*, had never been identified since it was first described in 1867. The other species, *Crabro montana*, was of interest, because it had never before been recorded east of Colorado.

Dr. HENRY SKINNER, *Recorder*.

The following papers were read and accepted by the Committee for publication in ENTOMOLOGICAL NEWS:

NEW EXOTIC LEPIDOPTERA.

By W. J. HOLLAND, Ph.D., Pittsburg, Pa.

(The species described in this paper are all represented in my collection by the types.)

RHOPALOCERA.

HESTIA Hüb.

1. **H. riukiuensis** sp. nov. ♂.—Closely allied to *H. leuconoe* Erich., but with all the black spots and lines greatly diminished in size, and in many cases obsolescent. The geminate white marginal spots of the anterior wings in both sexes and of the posterior wings in the female sex are confluent with the white ground color of the wings in such a way as to give the black spots at the ends of the nervules the form of the Greek capital letter Ypsilon. Expanse 5.75 inches.

Hab.—The Riukiu (Loochoo) Islands.

I have a pair of these insects which I purchased some five years ago from a gentleman in Yokohama, who happened to obtain them from an acquaintance who had collected them in the Riukiu Islands. Mr. Herbert Druce informs me that he has seen other specimens from the same locality. The species is very well marked and distinct.

MYNES Boisd.

2. **M. dohertyi** sp. nov. ♂.—The antennæ are black; the upperside of the thorax is clothed with glaucous hairs; the upperside of the abdomen is whitish; the lowerside of the thorax and abdomen and the palpi are whitish. The first pair of legs are whitish in front, but behind are oliva-

ceous, as are the second and third pair throughout. The primaries upon the upperside are white tinged with yellow, and with a broad, apical, black tract, which is continued narrowly along the outer margin and more narrowly along the costa. This black border is irrorated along the margin at the apex and above the outer angle by bluish olivaceous, and the ends of the inferior vein and the median nervules are black, and interrupt the white area of the wing for one-third of their length from the outer margin; just at the outer angle is a circular spot of deep black. The secondaries are glaucous at the base; the middle third is bluish green, and upon the outer third there is a broad, black, marginal band, produced inwardly upon the median nervules. The outer margin is marked by a very narrow, bluish gray, marginal line. Upon the underside the primaries are white, tinged slightly with yellowish, with the fringes black, as upon the upperside. The black apical area of the upperside reappears upon the lowerside, but is interrupted by spots and markings as follows: beyond the cell near the costa by a round spot of bluish white followed by two smaller oblong spots of the same color, by a transverse subapical band of bluish white, two marginal spots of the same tint above the outer angle, and two bright red, oblong spots on either side of the third median nervule near the outer margin. The secondaries upon the lowerside are broadly smoky-olive, with the outer margin greenish and the costa at the base crimson. The inner margin is laved with yellowish; the greenish outer margin is traversed by an inner and an outer series of geminate sublunulate markings upon the intraneural spaces; the outer series is separated from the fringe, which is black, and the two members of it from one another by narrow, bluish white lines.

♀.—The female does not differ materially from the male, except that the wings are much broader and the outer margin, both above and below, has no dark markings within the black fringes above the outer angle, except the circular spot at that angle, which is most conspicuous upon the lowerside. Expanse: ♂, 58 mm.; ♀, 65 mm.

Hab.—Buru.

This is one of the fine new species of Rhopalocera collected by Mr. Doherty during his recent visit to Buru. The genus *Mynes* has not hitherto been recorded from this island. It is a distinct and well-marked species, which differs in important particulars from all others in the genus. Having examined the figures or the types of all the other known species, I am able to confidently affirm the specific distinctness of the insect.

HETEROCERA.

SPHINGIDÆ.

OCYTON Boisd.

3. **O. crenulata** sp. nov. ♂.—Allied to *O. reutlingeri* Holl. The upperside of the body is slaty-gray; the lowerside of the palpi and thorax paler

gray; the lowerside of the abdomen darker and tinged slightly with reddish. The legs are concolorous, the tibiæ of the last pair marked by some pinkish tufted hairs. The primaries have the outer margin produced at the extremity of the third median nervule, and the margin between this point and the outer angle scalloped, or crenulate, in this respect resembling *Lophuron zantus* H. S., from which it differs, however, in not having the outer margin excavated below the apex. The primaries on the upperside are slaty-gray, crossed diagonally below the apex from the costa to the middle of the outer margin by a dark brown diagonal band defined on the side of the apex by a narrow paler line. In addition, there are obscure blackish markings and waved lines, composing a sub-basal and geminate limbal series. There are also two very small blackish dots at the end of the cell, between which is a pale brownish space. The secondaries are blackish, with the costal margin near the base testaceous, shining, and the outer margin near the anal angle pale gray. The outer margin is very narrowly whitish. On the underside the primaries are dark reddish gray, clouded with fuliginous on the middle area. There is a geminate limbal series of curved markings on the interspaces terminating below the apex and above the outer angle in a bright yellow spot. The secondaries on the underside are reddish gray, with a narrow and obscure curved transmedian and similar geminate submarginal lines, the latter terminating just before the anal angle in three or four salmon-colored spots. Expanse 55 mm.

Hab.—Batanga, Cameroons, West Africa.

4. **O. spiritus** sp. nov. ♂.—The upperside of the body pale olive-gray; lowerside of body whitish. Legs concolorous. The primaries on the upperside have the basal and middle area pale olivaceous with the apical area much paler, inclining to whitish. There is a very faint and narrow subbasal transverse line curved on the costa, succeeded beyond the cell by a broad, subtriangular, olivaceous spot extending from the costa to the third median nervule, upon which its apex terminates. Below it there is an incomplete transverse limbal band of like color, succeeded toward the anal angle by a subquadrate olive spot. The lighter outer area is interrupted by a narrow, waved, dark brown, submarginal line, and has some grayish cloudings on the costa and on the outer margin below the apex and above the outer angle. The secondaries are pale smoky-brown, interrupted by a still paler, broad, submarginal band, which shades into whitish at the anal angle. On the underside both wings are pale gray, with the outer margins somewhat broadly shaded with darker grayish brown; both are crossed by waved, geminate, transverse, median, and submarginal lines, the space between them being the palest portion of the wing. The primaries have the costa reddish fawn, with the middle and basal area heavily suffused with fuliginous. Expanse 48 mm.

Hab.—Kangwé, Valley of the Ogové, West Africa.

ANTINEPHELE Holl.

5. **A. achlora** sp. nov.—Dr. A. G. Butler described a species of this genus under the name of *anomala*. In the large series of specimens, which I originally referred to Dr. Butler's species, I find eight specimens, males and females, which are uniformly characterized by the entire absence of the greenish lines, which, in Dr. Butler's species, run from the transverse basal band along the costa and below it connecting the subbasal band with the diagonal subapical band of spots. Furthermore, there is found in all these specimens a series of transverse limbal lines and markings, which do not appear in Dr. Butler's species in the primaries below the green lines of which I have spoken. The body on the underside in *A. anomala* is whitish. In all the specimens to which I refer it is reddish. The secondaries on the underside are marked by a series of dark transverse brown lines, most distinct upon the costa. The general facies of the species is that of a darker and more obscurely colored insect. Whether a species or a varietal form of *A. anomala* it is hard for me to say, but Mr. Druce, who has examined the series of species in my collection, agrees with me that it is well worthy of a name, and hence I have designated it as *Antinephele achlora*, because of the absence of the green lines on the primaries. Expanse 55 mm.

6. **A. marcida** sp. nov. ♂.—Allied to *A. anomala* and *A. achlora*, but larger. The primaries are ochraceous, with the basal and costal area olive-green, crossed from the costa before the apex by a series of silvery spots, defined outwardly by a broad blackish line, and marked at the apex with a whitish spot. The olive-green basal and costal area is interrupted by a parallel series of dark brown lines. The upperside of the secondaries is fuliginous. The primaries on the underside are sooty-brown, except on the outer third, where they are reddish brown, and where the spots and lines of the upperside faintly reappear. The secondaries on the underside are reddish brown, with obscure and narrow, transverse, median and geminate, transverse, limbal lines. The margin is broadly darker, especially at the apex. The transverse limbal line has its costal extremity accentuated by a black spot. Expanse 57 mm.

Hab.—Benita, West Africa.

DIODOSIDA Walk.

7. **D. funebris** sp. nov. ♂.—Allied to *D. fumosa* Walk., from which it differs in the greater breadth of the primaries, as well as in its different coloration. The upperside of the thorax is dark rosy-brown; the upperside of the abdomen paler rosy-brown. The underside of the body is throughout bright rosy-brown; the legs concolorous, except the first pair, which have the tibiæ and the tarsi margined with white. The primaries on the upperside are dark lilacine-gray, clouded with brown at the base, crossed beyond the base by a curved submarginal band much more sharply curved than that in *fumosa*. The broad median band, which appears in *fumosa*, is lacking in this species, and the primaries are crossed

by a dark brown shade, running from the costa at the end of the cell to the outer margin above the outer angle. The outer margin below the apex is marked by a broad lunulate brown spot; there are also some obscure, parallel, submarginal lines within this brown mark near the apex. The secondaries on the upperside are dark rosy-brown, clouded with darker brown on the margin, and with the edge very narrowly white. On the underside both wings are rosy-brown, with the basal area and the cell of the primaries blackish. Both wings are traversed by very narrow and obscure, transverse, median, limbal, and submarginal lines.

♀.—The female does not differ from the male, except in that the wings are broader and the body heavier and shorter. Expanse: ♂, 60 mm.; ♀, 70 mm.

I have a series of seven specimens of this species taken at Benita.

DEWITZIA Holl.

8. **D. perpallida** sp. nov., ♂.—This species is allied to *D. paupercula* Holl., but is much smaller and much lighter in coloration. On the upperside the entire insect is pale ashen-gray, clouded with pale rosy-brown upon the costa and near the base of the primaries. There is a faint transverse basal, sub-basal, median, and geminate submarginal series of lines, the submarginal series being accentuated by minute dots upon the nervules. On the secondaries there are transverse median and geminate submarginal lines, the latter accentuated as in the primaries by minute blackish dots. The fringes of the primaries are pale gray; of the secondaries whitish. On the underside both wings are pale gray; both have transverse median and geminate submarginal lines, the latter as on the upperside accentuated by minute black dots on the nervules. Expanse 55 mm.

Hab.—Benita.

LITHOSIIDÆ.

TEGULATA Walk.

9. **T. (?) nigristriata** sp. nov. ♂.—Head, collar and upperside of thorax yellowish. The tegulæ have a black line in the middle near the outer end, and there are two black spots on the upperside of the thorax between the bases of the tegulæ and a linear black mark upon the middle of the thorax. The abdomen is yellow, annulated with black on the last two segments on the upperside only. The underside of the thorax, abdomen, and the legs are uniformly yellow. The primaries are creamy, with all the interspaces between the nervules filled in with black, and a large oval spot on the middle of the cell and a small black spot beyond it in the secondary cell. The secondaries are pale testaceous with the base and inner margin tinged with yellowish. The fringes of both wings are creamy. The undersides of the wings have markings as on the upperside, but much paler. Expanse 30 mm.

Hab.—Kangwé, West Africa.

This beautiful species is very closely allied to the genus *Tegulata*, but differs so strikingly in its markings from all other species of the genus, that I refer it, with some hesitancy, especially since the outer portion of the wings is somewhat narrower and more rapidly reduced in width than in any other species hitherto referred to the genus.

BOMBYCIDÆ.

CTENOGYNA Feld.

10. **C. (?) ogovensis** sp. nov. ♂.—Front, palpi and collar, pale fawn; upperside of thorax and abdomen pale reddish fawn, with a dark brown dorsal line upon the abdomen extending its whole length. The underside of the body, together with the legs, grayish white with one or two dark brown spots on the ventral line of the abdomen. Upperside: primaries reddish fawn, with a minute black discal dot at the end of the cell. It is further ornamented by irregularly curved and very narrow transverse basal, median and sublimbal lines. A dark line runs from after the middle of the inner margin to the apex, being strongly angulated just before reaching the apex. At its lower extremity upon the inner margin it is accentuated by two silvery dots placed on its basal margin. The apex above the angulation of this line is slightly paler than the rest of the wing. There is a submarginal series of minute brown dots on the interspaces; the fringes are dark brown. The secondaries are uniformly yellowish ochraceous, with the anal angle and outer margin before the same tipped with brown. Underside: both wings are yellowish white, with the costal and outer area of the primaries and almost the entire body of the secondaries dusted with pale brown scales. The primaries are marked by a transverse limbal line, which is dark brown on the costa and accentuated by blackish linear dots upon the nervules where crossed by this line. The nervules beyond this line are covered by dark brown scales, and the submarginal series of brown dots which appears on the upperside reappears on the lowerside. The secondaries have a small black discal dot at the end of the cell, followed by a curved, but very indistinct, transverse median line, which does not reach the inner margin. The transverse limbal line of the primaries is continued as a regularly curved line upon the secondaries and the black dots on the nervules are very sharply defined. There is also a small brown spot at the outer angle. The fringes of the primaries are dark brown; of the secondaries paler brown.

♀.—The female corresponds in all respects very closely with the male, save that the transverse outer line on the upperside of the primaries is not angulated before the apex and the markings on the underside of the wing are more obscure, and the pectinations of the antennæ are shorter. Expanse: ♂ and ♀ 40 mm.

Hab.—Kangwé, West Africa.

The female specimen on the plate was obtained from a cater-

pillar, the description of which Mr. Good failed to write prior to pupation. He says: "When ready for its change, it strung together by silken threads little lumps of earth in the jar in which it was feeding, so that it was covered all over with a web of little clods of the size of grains of corn. In these it turned into the chrysalis. It emerged from the chrysalis Nov. 15, 1888."

11. **C. (?) vilis** sp. nov. ♂.—Allied to the preceding, from which it differs, however, totally in color. The antennæ, thorax and body, are uniformly pale gray, with the underside of the body whitish. Upperside: primaries dirty yellowish gray, with the outer margin clouded obscurely with ferruginous. The transverse lines are much as in *C. ogovensis*, but less sharply defined. The secondaries are uniformly pale creamy-white. Underside: both primaries and secondaries creamy-white, with the outer extremities of the nervules shaded with pale brown. Expanse 40 mm.

Hab.—Kangwé, West Africa.

NOTODONTIDÆ.

LEPASTA Möschl.

12. **L. africana** sp. nov. ♂.—Front, antennæ and collar, dark brown; patagia creamy-white, tipped with dark brown; body and legs dark brown. Upperside: primaries, with the base and a narrow streak on the costa from the base to the middle of the costa, dark brown. This line is followed by a broad, silvery-white line running from the inner margin before the base parallel to the costa, and terminating upon it before the apex. The entire wing beyond this silvery-white line is brown, interrupted by a marginal silvery line succeeded inwardly by a similar submarginal silvery line, which runs from before the apex to the first median nervule, and then sweeps inwardly and upwardly toward the cell, widening gradually and terminating abruptly near the origin of the first median nervule. Within the curved line there is another V-shaped silvery line reversed toward the outer curve, the lower limb narrow and following the line from the third median nervule, and the upper limb widening toward the outer margin and following the line from the first radial. The secondaries are uniformly fuscous in the type. Another specimen in my possession has the secondaries creamy-white; otherwise, it does not differ from the type. The underside of the wings is obscure fuscous, or whitish, with the markings of the upper surface reappearing very faintly. Expanse 26–33 mm.

Hab.—Kangwé, West Africa.

LASIOCAMPIDÆ.

STIBOLEPIS Butl.

13. **S. abluta** sp. nov. ♂.—Allied to *S. nivea* Butl. Wings silvery-white, slightly clouded on the upper surface with pale gray along the costa and the outer margin. The costa is further marked by six incomplete, transverse, black bands, followed before the apex by a transverse series of

four circular black spots running from the costa to the third median nervule. In the inner margin above the outer angle there are two sagittate black spots coalescing with each other. The extremities of the nervules are indicated by narrow black striæ, between which there appear some very faint angular lines. The fringes are white, very narrowly checked with black at the middle of the interspaces. The secondaries are marked on the outer border much like the primaries. On the underside the costa and apex of the primaries and the extremities of the nervules on both primaries and secondaries are black; otherwise, the wings are pure white. The front and the abdomen are ochraceous; the antennæ have the culmen black, the setæ rufous. The legs are pale ochraceous, with the tarsi black. Expanse 70 mm.

Hab.—Kangwé, West Africa.

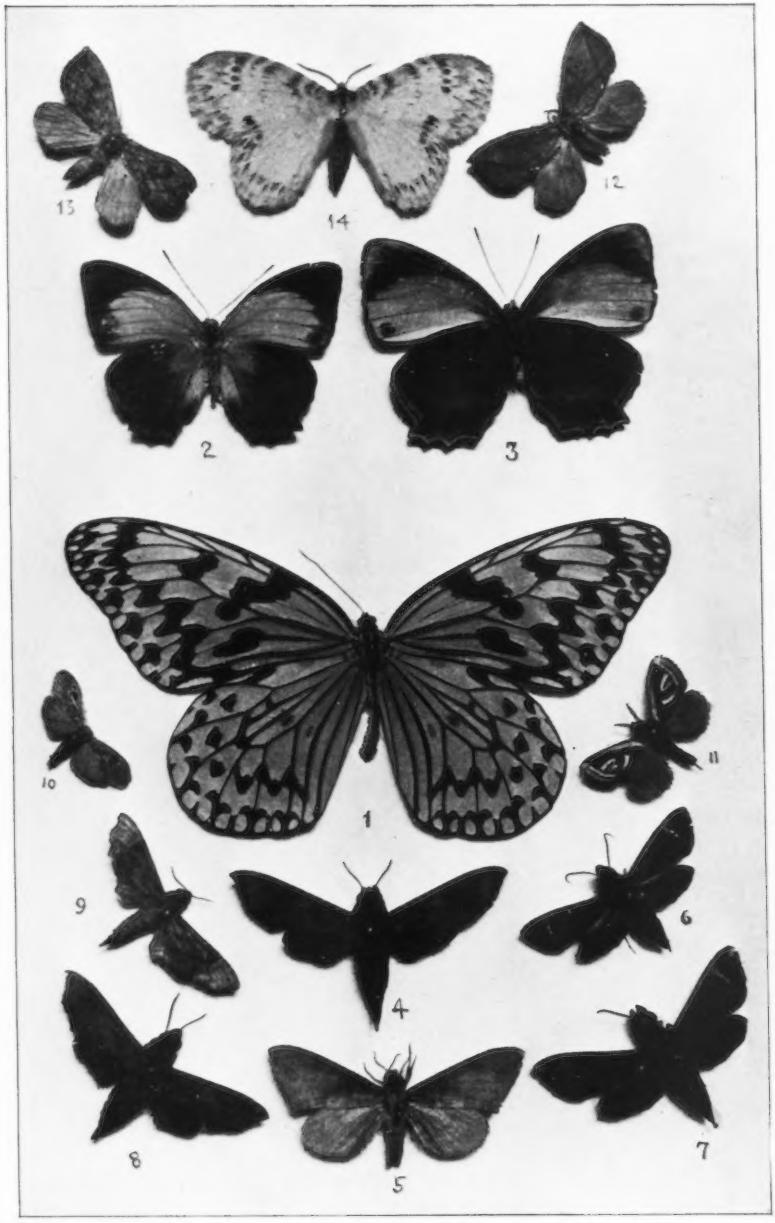
I was first inclined to refer this species to *S. sylvia* Druce, but a careful study of the description given by Mr. Druce shows marked differences, and Mr. Druce himself assures me, after seeing the type, that it is totally distinct.

EXPLANATION OF PLATE XV.

Fig. 1. *Hestia riukiuensis* ♂, sp. nov.
" 2. *Mynes dohertyi* ♂, sp. nov.
" 3. *Mynes dohertyi* ♀, underside.
" 4. *Diodosida funebris* ♂, sp. nov.
" 5. *Dewitzia perpallida* ♂, sp. nov.
" 6. *Antinephele achlora* ♂, sp. nov.
" 7. *Antinephele marcida* ♂, sp. nov.
" 8. *Ccyton crenulata* ♂, sp. nov.
" 9. *Ocyton spiritus* ♂, sp. nov.
" 10. *Tegulata? nigristriata* ♂, sp. nov.
" 11. *Lepasta africana* ♂, sp. nov.
" 12. *Ctenogyna ogovensis* ♀, sp. nov.
" 13. *Ctenogyna vilis* ♂, sp. nov.
" 14. *Stibolepis abluta* ♂, sp. nov.

ERRATA.—Vol. IV, Nos. 8 and 9.

Page 280, after *parinda* insert , are analogous to the blue nebula (irroration) next to the ocellus of secondaries of *P. elwesii.*
Page 285, line 15 from bottom, for distinctive *read* destructive.
" 286, after line 10 insert the following: As the insect probably deposits the eggs before leaving the trees for the golden-rod.
Page 289, line 11 from bottom, for base *read* house.
Larva of *Citheronia splendens* Druce.—Through an error in determination, the larvæ of this species have been described by us as *Citheronia mexicana* on page 311. The name should be changed as above.—H. G. Dyar and J. Doll.



EXOTIC LEPIDOPTERA Holland (Reduced about one-third).

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AND

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OF THE

ACADEMY OF NATURAL SCIENCES

OF

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EXCHANGES

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Coleoptera of N. Am. and Mexico wanted by purchase or exchange; large collection.—Fred. C. Bowditch, Tappan St., Brookline, Mass.

Lepidoptera.—Wanted, *Plusia balluca*, *metallica* and *ampla;* also the Hydrœcias. Have some of the rarer eastern Noctuids for exchange.—Henry Bird, Rye, N. Y.

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Lepidoptera.—Good exchange or cash given for specimens of *Nadata doubledayi* Pack. Also wanted any of the rarer Notodontidæ and Limacodidæ.—Harrison G. Dyar, 599 Broadway, New York City.

Coleoptera.—I wish to obtain Entomological literature in any language, especially that treating of Coleoptera and for works not in my possession will give good insects from the West and from Alaska, mostly Coleoptera.—H. F. Wickham, Iowa City, Iowa.

Lepidoptera.—I have for exchange *C. semidea*, *A. montanus*, *S. modesta* (imagos and pupæ), and other White Mountain material. The rarer Sphingidæ preferred.—R. Ottolengui, 115 Madison Ave., N. Y.

Lepidoptera (diurnal) of Iowa to exchange for species of same order not in my collect on.—Henry G. Willard, Grinnell, Iowa.

Coleoptera.—Price-lists wanted.—Dr. E. B. Stephens, Plymouth, Mass.

Cynipidæ.—Named or unnamed Cynipidæ wanted by purchase or exchange. Always accompany the flies with their galls when possible.—C. P. Gillette, Ft. Collins, Col.

Orthoptera.—For exchange: Mexican Lepidoptera, unmounted, for literature, in any language, on N. A. Orthoptera. Also Indiana Orthoptera for others from any part of N. A.—W. S. Blatchley, Terre Haute, Ind.

Orthoptera.—I desire to procure, by purchase, exchange, or for identification, specimens of the genus *Spharagemon* from all parts of the country.—Albert P. Morse, Wellesley College, Wellesley, Mass.

Lepidoptera.—Cocoons and pupæ of the rarer moths, *luna*, *imperialis*, *regalis*, *P. fraterna*, *P. pithecium*, etc.; also fine set specimens; hybrids from *selene* et *luna*, *ceanothi* et *cecropia*, *Gloveri* et *cecropia*. List exchanged.—Emily L. Morton, Newburgh, N. Y. (New Windsor Deliv.)

Lepidoptera.—Prepared larvæ, live pupæ, Coleoptera and Reptiles from America desired in exchange for species of Europe.—A Voelschow, Schwerin in Mecklinburg, Germany.

Lepidoptera.—American diurnals wanted. Will buy or exchange. Hesperidæ and Lycænidæ especially desired.—Henry Skinner, Academy of Natural Sciences, Logan Square, Philadelphia, Pa.

Odonata.—Dragonflies. Species not in my collection wanted from all parts of the world. N. American species given in exchange, or named by special agreement.—P. P. Calvert, Acad. of Nat. Sciences, Phila., Pa.

Coleoptera and **Lepidoptera.**—I desire to exchange specimens with collectors in the South and West who wish to extend their collections; correspondence solicited.—F. W. Russell, M.D., Winchendon, Mass.

I am desirous of collecting in any of the Orders in Northwestern Ohio; write me.—N. Sager, Jr., Herring. P. O., Allen Co., Ohio.

Diurnal Lepidoptera.—I will be pleased to correspond with collectors with view to exchanging Lepidoptera of the world. I usually have 2000 or 3000 mounted duplicates on hand, in perfect condition. A. G. Weeks, Jr., 360 Washington St., Boston.

Lepidoptera.—A few rare Indian Lepidoptera to exchange for rare species from the Northwest.—Levi W. Mengel, Reading, Pa.

Correspondence and exchange of insects desired with young entomologists, especially in the Southern and Western States and Mexico.—Stewart N. Dunning, 43 Niles St., Hartford, Conn.

I desire to dispose of Japanese insects by sale or exchange, and of *A. yamamai* and silk-worm *ova* at once; correspondence solicited; refer by per. to Prof. C. V. Riley.—Otoji Takahashi, Tokio, Japan.

Coleoptera.—*Aegialites Fuchsii* Horn, Trans. Am. Ent. Soc. xx, p. 143, 1893. I offer this rare and interesting species in exchange for Coleoptera not in my coll. Address C. Fuchs, 212 Kearney St., San Francisco, Cal.

Lepidoptera.—I desire to obtain eggs or larvæ of *Eacles regalis* and *Sphinx modesta;* will exchange for other good material.—Hermann Aich, 43 Murray St., New York.

Lepidoptera.—I have a large number of duplicates which I offer for sale or exchange. Address G. Cleveland, 17 Elm St., Oneonta, N. Y.

Lepidoptera.—Hybrid cocoons of *Ceanothi* et *Cecropia* in exchange for rare, perfect specimens of Sphingidæ, Arctiidæ, Bombycidæ, Catocalæ and Diurni not in my collection.—Dr. R. E. Kunzé, 606 Third Ave., N. Y.

Lepidoptera.—I have on hand a large supply of duplicates to exchange for insects of the same order not in my collection. Correspondents especially desired from the S. W. and N. W. part of the U. S. Send list of duplicates to Leigh I. Holdredge, 27 Ford Ave., Oneonta, N. Y.

Lepidoptera.—Several thousand specimens taken in Utah during past Summer for exchange; *Parnasius, Chionobas, Theclas*, etc.; also good specimens from Illinois; all in papers.—A. J. Snyder, North Evanston, Ill.

Lepidoptera.—Wanted, cocoons of *regalis, imperialis, gloveri, io, cecropia, polyphemus, promethea* and others, as well as pupæ,—against Lepidoptera of all parts of the world.—Bernard Gerhard, 1520 Lafayette Avenue, St. Louis, Mo.

Lepdoptera.—Correspondents wanted on Pacific coast, or Colorado, with a view to exchange in Lepidoptera.—Oliver J. Staley, Marshall, Saline County, Mo.

Lepidoptera.—We wish to obtain, either by purchase or exchange, live larvæ or pupæ of *Ecpantheria scribonia* and imagos of *Erebus odora*.—Field Brothers, Milton, Mass.

Wanted.—Coleoptera and Lepidoptera from all sections. Will exchange works on Entomology, Zoology and Botany, and works relating to the languages of the N. A. Indian. Send for list.—Wm. D. Doan, Box, 377, Coatesville, Pa.

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Lepidoptera.—Three thousand duplicates for exchange. Send list of duplicates. Correspondence solicted.—P. C. Truman, Volga, S. Dakota.

Lepidoptera.—I have for exchange a large number of duplicates of last summer's collecting. Please write for list. Also cocoons of *Cecropia* and *Polyphemus*.—James Tough, 234 S. Water Street, Chicago, Ill.

Lepidoptera.—I have a large number of specimens, taken in the Sierra Nevada Mountains, for exchange.—F. Burns, Verdi, Nevada.

Orthoptera.—Wanted, by exchange or purchase, specimens of the subfamily *Tettiginæ* from all parts of North America; literature also desired. —Dr. Joseph L. Hancock, 255 31st St. Chicago, Ill.

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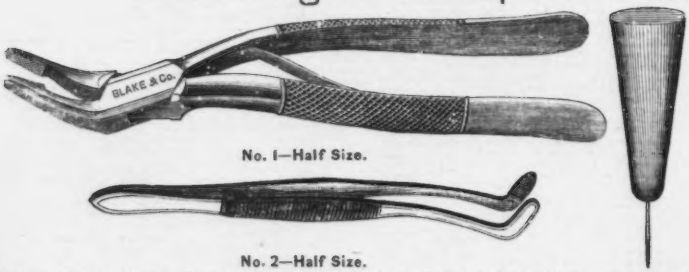

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